Contributed paper
Section .

The role of 'peer review' in science: Exploring how and why the IPCC blundered on the melting rate of Himalayan glaciers

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Short Abstract

In their recent book, 'Merchants of Doubt' (2010), Naomi Oreskes and Erik M. Conway showed that „peer review" is a very helpful and crucial tool in establishing scientific results. As for the Intergovernmental Panel on Climate Change, it was their extended peer review which made them into a respected scientific organisation on the issue of global warming. Their (latest) Fourth Assessment Report however shows us that their appraised review process fell short by letting mistakes get published. The question is: How did these mistakes get through peer review? In this paper, I first explain in detail what went wrong, and shed some light on the concept of peer review and its role in scientific practice. On top of this, the responsibilities that arise for (1) scientists, (2) laymen, and (3) the IPCC as organisation will be spelled out.

Extended Abstract

In their recent book, 'Merchants of Doubt' (2010), Naomi Oreskes and Erik M. Conway managed to portray how a handful of scientists obscured the truth on issues from tobacco smoke to global warming. In the case of global warming, respected scientists like Ben Santer, one of the lead authors of the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (1995), was accused by several physicists of "scientific cleansing" (by expunging the views of dissenting opinions) and "deceiving policy makers and the public", all because he had allegedly changed parts of the report behind the backs of his fellow authors. Ranging over issues like global warming, tobacco smoke, acid rain, and the hole in the ozone layer, Oreskes and Conway showed that (basically) the same group of sceptics, driven among others by scientists like Fred Singer and Frederick Seitz and conservative think tanks like the Alexis de Tocqueville Institution, were behind these multiple attacks on mainstream science. Their goal was not to show the world the truth of the matter, but they were mainly interested in fighting facts that were not in line with their personal interests. They fought the scientific evidence and spread confusion, which allowed them to merchandise doubt and contribute to a general 'more evidence is needed before action can be undertaken' state-of-mind.

The authors took up science's defence, by showing what doing science actually entailed in all of these cases. As for Ben Santer, it turned out he was simply doing his job by granting peer review its place in science. The extensive and inclusive peer review process of the IPCC required Santer to involve both scientific experts and representatives of the governments of the participating nations to ensure not only that factual errors were caught and corrected, but as well that all judgments and interpretations were adequately documented and supported, making sure that all interested parties had a chance of being heard. He was thus attacked for being a good scientist. So if these sceptics had simply taken the time to familiarize themselves with IPCC rules of procedures, they would have readily found out that no rules were violated,

no procedures were transgressed, and thus nothing wrong had happened. The changes that were made, were made in response to review comments from scientists.

Central in the authors' general argument, is the concept of 'peer review' itself, which is regarded to be a helpful tool in discerning 'the good science from the junk'. When we return to our IPCC example, we notice that it was exactly this extended peer review in taking reviewers' comments and criticisms seriously which made the IPCC into a respected and highly credited scientific organisation. Through the existing four assessment reports the organisation has proven its scientific worth in the debate on global warming. But recent sceptic attacks, which became famous under the general term 'climategate', were once more targeted against the conclusions as they were put forward by the latest Fourth Assessment Report (2007). These critical voices reached their peak when the IPCC board had to acknowledge that the report actually contained some striking flaws, as in the case of the incorrect projection of the disappearance of the Himalayan glaciers. In response to sustained criticism and a heightened level of public scrutiny of this report, the United Nations and IPCC asked the Inter Academy Council to assemble a committee to review the processes and procedures of the IPCC and make recommendations for change that would enhance the authoritative nature of the IPCC reports.

The question which tends to be forgotten is: How did mistakes as the one on Himalayan glaciers get published, when this excessive system of 'peer review' was in fact in place? If the review process did what it was supposed to do, these mistakes would have never occurred. Now, if a lack of peer review did not cause them, what else did? Are critics entitled to say that (green routed) scientists had let their own political viewpoints take over in presenting unsubstantiated facts as evident? Whatever the answers might be, it is clear that there must be something more at stake here.

In this paper, my goals are twofold. First, I spell out in detail what went wrong, and how the errors got incorporated in the final report. This analysis will allow me to shed new light on the concept of 'peer review' and on its role in science. The example shows that scientific practice entails responsibilities for (1) experts (scientists who write and/or comment the report), (2) laymen (the general public, government representatives, and different kinds of media), and (3) the IPCC as organisation. Spelling out each of their responsibilities will be the second aim of this paper. All of these insights and recommendations will be particularly interesting to look into now that the fifth assessment report is on its way, and 'scientific debunkers' are more than ever ready to have a go at it.

References

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